ECONOMIC COMMENTARY

Impact of Southern Alberta Flooding on Hours Worked and GDP

September 6, 2013

Highlights:

Over the final two weeks of June 2013, Southern Alberta experienced extensive flooding in several communities, causing high amounts of damage. Approximately 5.1 million hours of work were lost due to the flooding over this period, resulting in $485 million of lost economic output by the private sector.

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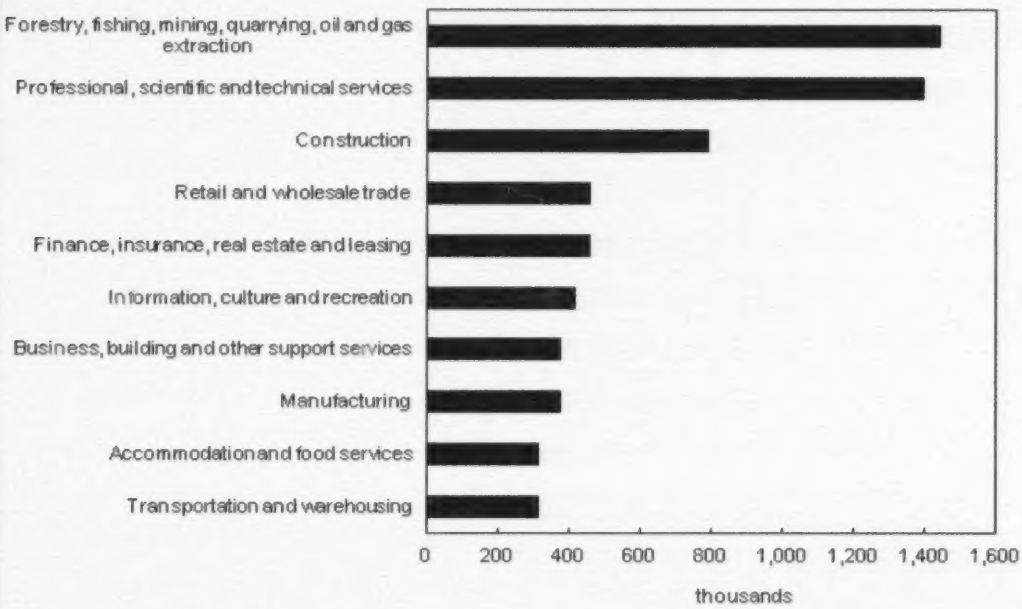
Impact of Flooding on Hours Worked in Southern Alberta

Statistics Canada has recently released analysis on the impact of the extensive flooding in Southern Alberta on hours worked in the province. They found that during the last two weeks in June about 300,000 Albertans (or 13.5% of the employed population in Alberta) lost 7.5 million hours of work. During the same period, 134,000 people worked an additional 2.4 million hours in flood relief efforts. The net result is a loss of 5.1 million hours worked in June.

Almost every industry experienced net losses in hours worked, except public administration and utilities, which saw increases in employees' workloads over this period outstrip work losses. The impacts were not evenly felt, however, as some industries experience much larger hour losses than others. The largest losses were felt in the primary resource sectors (with the vast majority in the oil and gas industry) and in the professional, scientific, and technical services industry, both of which experienced about one in four employees missing work due to the flooding. The chart below shows total hours lost by industry:

Total work hours lost (thousands) because of flooding in Alberta, top 10 affected industries, second half of June 2013



Men who lost working hours because of flooding tended to lose more hours than women who lost working hours (26.2 hours vs 23.5 hours). Alternatively, men with who had to work additional hours because of flooding tended to work more extra hours than women (19.5 hours vs 15.0 hours). The

flooding also affected the 25 to 39 age group more than others, with 14.5% of workers in that age group missing work, compared with 10.3% of workers in the 15 to 24 age group.

Economic Impact of Flooding

Using the above figures, we can estimate the amount of GDP that was lost in June from the flooding – in its release, Statistics Canada suggested that *"the impact of the recent flooding in Alberta on hours worked allows for some measurement of the overall economic impact"*[1]. We accomplish this by applying each industry's 2012 labour productivity level (measured by GDP per hour worked) to the June estimate for hours lost[2][3]. For instance, if a company lost 10 hours of work because of the flooding, and each hour of work creates $10 of GDP, we know that company lost $100 of economic output. Using a similar rationale applied over a much larger scale, we can estimate how much GDP was lost over the last two weeks of June[4].

Industry	Net Work Hours Lost (thousands)	Labour Productivity (Real GDP/hour)	Real GDP Lost (2007 dollars)
Agriculture	33.5	$ 42.10	$ 1,410,350
Oil and gas	1248.5	$ 232.70	$ 290,525,950
Utilities	-24.9	$ 149.70	$ (3,727,530)
Construction	347.3	$ 50.20	$ 17,434,460
Manufacturing	325.6	$ 64.60	$ 21,033,760
Trade	296.3	$ 40.31	$ 11,942,840
Transportation and warehousing	122.9	$ 48.50	$ 5,960,650
Finance, insurance, real estate and leasing	282.9	$ 108.79	$ 30,777,634
Professional, scientific and technical services	1217.6	$ 50.30	$ 61,245,280
Business, building and other support services	309.4	$ 36.10	$ 11,169,340
Information, culture and recreation	321	$ 78.75	$ 25,278,050
Accommodation and food services	233.9	$ 25.40	$ 5,941,060
Other services	182.5	$ 34.70	$ 6,332,750
		Total:	$ 485,324,593

According to our estimates, the Alberta private sector lost $485.3 million in real GDP from the net working hours lost during the last two weeks in June. Factoring in public sector working losses, we would estimate approximately $500 million in economic impacts. These numbers are expressed in constant 2007 dollars.

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[1] http://www.statcan.gc.ca/daily-quotidien/130827/dq130827b-eng.htm

[2] We used the Labour Force Survey as our source for estimates of flood impacted hours instead of the Survey of Employment, Payrolls and Hours as the LFS included additional questions about the impacts of the flooding on hours worked.

[3] Lost hours worked because of flooding do not imply lost wages, only lost output. It is assumed that where wages were not impacted there was a commensurate impact on corporate profits.

[4] It is assumed that applying overall 2012 Alberta productivity levels to a two-week window in 2013 in Southern Alberta is a reasonable approximation. There may be small discrepancies, but they are not assumed to be material enough to invalidate our outcomes.

By far the largest contributor to economic loss was the Oil and Gas industry (extraction & services), which is estimated to have lost $290.5 million in GDP over this time frame, or about 60% of economic output lost by the economy as a whole. This is due to this industry not only having the most net hours lost, but also because their GDP created per hour worked is by far the highest among all industries.

Other industries experiencing major economic output losses are Professional, Scientific, and Technical Services (losing $61 million), Finance, Insurance, and Real Estate (losing $31 million), and Information, Culture, and Recreation (losing $25 million).

It is important to point out that these figures only cover the last two weeks in June. Statistics Canada will hopefully publish supplementary numbers to cover how hours worked were impacted into July and August. After these are analyzed, we will begin to get a sense of whether companies continued to have operations negatively impacted, or whether they actually began to increase hours worked to compensate for lost time from the flooding.

While realizing that $500M is a lot of economic activity, it's important to put that number into context – it represents about 0.2% of Alberta's annual GDP, or about 2.2% of June's GDP. The impact on GDP in the affected communities will be much larger, for instance Calgary's June GDP could be reduced by as much as 4% or 5% as a result of the floods. So while the flood represents a massive disruption, the size of the overall economy suggests there may not be an extremely large impact on Alberta's 2013 economic output. That being said, this study only covers a small period in time (the last 2 weeks in June), and longer term impacts on hours worked are still unclear. Moreover, once the initial negative impacts have subsided, Alberta's GDP will receive a boost from the reconstruction activities, which may more than offset these negative impacts.

Further, this study only looks purely at economic output – surely there will be much larger effects in terms of damaged or destroyed property and/or assets. Destruction of property is not reflected in GDP as a negative – instead, it impacts society's capital stock as a whole. Some of the reconstruction efforts will supplement GDP, but may simply divert economic activity just to return our capital stock to a pre-flood comparable position. In other words, instead of enhancing societal welfare by the creation of new buildings with our labour and investment, we will be using those resources to return us to positions we had already been in before (generally). The losses associated with this phenomenon are assumed to be much larger than those outlined here.

To read further Southern Alberta flood-related analysis, please refer to Alberta Treasury Board and Finance's recent First Quarter Fiscal Update, which has forecast overall economic impacts and insightful explorations of similar topics:
http://www.finance.alberta.ca/publications/budget/quarterly/2013/2013-14-1st-Quarter-Fiscal-Update.pdf

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